This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1.   (Previously presented) A method for concealing data within a digital signal, the method comprising:

receiving a first data pattern of discrete values which are bits of a watermark and a second data pattern of discrete values which are bits of a covert message;

imposing a discrete value of the second data pattern over one or more discrete values of the first data pattern to generate a third data pattern, wherein the imposing is carried out by performing a Boolean operation with a discrete value of the second data pattern and multiple discrete values of the first data pattern;

processing the digital data signal into a series of bitframes, wherein each bitframe includes a set of frames, and wherein each frame includes a set of blocks; and

encoding the third data pattern into the digital signal, wherein a different bit of the watermark is encoded in each frame of at least one subject bitframe, and wherein a same bit of the covert message is encoded in each frame of the subject bitframe.

2-3. (Canceled)

4.   (Previously presented)   A method as recited in claim 1, wherein the Boolean operation is XOR.

5.   (Previously presented)   A method as recited in claim 1, wherein

a pattern of discrete values may be encoded into the digital signal in one of multiple discrete states;

the imposing comprises encoding one or more multiple values of the first data pattern into the digital signal into a state that indicates a single discrete value of the second data pattern.

6.   (Previously presented)   A method as recited in claim 1, wherein the digital signal is selected from a group consisting of a digital audio signal, a digital video signal, a digital image signal, and a digital multimedia signal.

7.   (Previously presented)   A method as recited in claim 1, wherein the different bit of the watermark which is encoded in a respective frame of the subject bitframe, is repeated in each block of the respective frame.

8.   (Currently Amended)   A computer having a computer-readable <u>storage</u> medium as recited in claim 1.

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9.　(Previously presented)　A method for revealing a covert data pattern of discrete values from an encoded data pattern of discrete values in a digital signal, the method comprising:

receiving a digital signal, the digital signal being segmented into a series of bitframes which each include a set of frames, the digital signal having an encoded data pattern of discrete values representing a first data pattern of discrete values which are bits of a watermark, a different bit of the watermark encoded in each frame of at least one subject bitframe, and a covert data pattern of discrete values which are bits of a covert message, a same bit of the covert message encoded in each frame of the subject bitframe; and

extracting a discrete value of the covert data pattern from a plurality of values of the encoded data pattern, wherein the extracting is carried out by decoding a single discrete value of the covert data pattern from the digital signal based upon a state of a multiple discrete values of the encoded data pattern.

10-11. (Canceled)

12.　(Previously presented)　A method as recited in claim 9, wherein the digital signal is selected from a group consisting of a digital audio signal, a digital video signal, a digital image signal, and a digital multimedia signal.

13.　(Currently Amended)　A computer having a computer-readable storage medium as recited in claim 9.

14. (Currently Amended) A method for encoding a watermark with a covert message into a digital audio signal, the method comprising:

encoding multiple binary bits of the watermark into frames of at least one subject bitframe of the digital audio signal, a different one of the multiple binary bits encoded into each of the frames, the multiple binary bits encoded into the digital audio signal in multiple states; and

encoding a binary bit of the covert message over all the frames of the subject bitframe of the digital audio signal, the binary bit of the covert message indicating a single discrete value of the covert message, wherein the binary bit of the covert message is encoded in each frame of the subject bitframe at a different frequency with respect to each frame.

15. (Currently Amended) A method as recited in claim 14, wherein the multiple states are positive or negative modifications to magnitudes of one or more subbands in ~~the~~ a frequency spectrum of a sample of the digital audio signal.

16.   (Currently Amended)   A method for imposing a covert message into a watermark, the method comprising:

generating multiple watermarks;

assigning each of the multiple watermarks to <u>a respective discrete value, wherein each respective discrete value represents at least a portion of a corresponding covert message</u> ~~each of possible discrete values for at least a portion of the covert message~~;

selecting a watermark that corresponds to an actual discrete value of at least a specific portion of the covert message;

without encoding any portion of the covert message itself into a digital signal, encoding the selected watermark into the digital signal.

17.   (Previously presented)   A method as recited in claim 16, wherein

size of all portions of the covert message is N bits long;

number of the multiple watermarks is 2^N.

18. (Currently Amended) A computer-readable storage medium having computer-executable instructions that, when executed by a computer, perform a method for concealing data within a digital signal, the method comprising:

receiving a first data pattern of discrete values which are bits of a watermark and a second data pattern of discrete values which are bits of a covert message;

imposing a discrete value of the second data pattern over one or more discrete values of the first data pattern to generate a third data pattern, wherein the imposing is carried out by performing a Boolean operation with a discrete value of the second data pattern and multiple discrete values of the first data pattern;

processing the digital signal into a series of bitframes, wherein each bitframe includes a set of frames, and wherein each frame includes a set of blocks; and

encoding the third data pattern into the digital signal, wherein a different bit of the watermark is encoded in each frame of at least one subject bitframe, and wherein a same bit of the covert message is encoded in each frame of the subject bitframe.

19.   (Currently Amended)   A   computer-readable   <u>storage</u>   medium having computer-executable instructions that, when executed by a computer, perform a method for revealing a covert data pattern of discrete values from an encoded data pattern of discrete values in a digital signal, the method comprising:

receiving a digital signal, the digital signal being segmented into a series of bitframes which each include a set of frames, the digital signal having an encoded data pattern of discrete values representing a first data pattern of discrete values which are bits of a watermark, a different bit of the watermark encoded in each frame of at least one subject bitframe, and a covert data pattern of discrete values which are bits of a covert message, a same bit of the covert message encoded in each frame of the subject bitframe; and

extracting a discrete value of the covert data pattern from a plurality of values of the encoded data pattern, wherein the extracting is carried out by decoding a single discrete value of the covert data pattern from the digital signal based upon a state of a multiple discrete values of the encoded data pattern.

20.   (Previously presented)   An apparatus comprising:

a processor;

a covert-channel-encoder executable on the processor to:

receive a first data pattern of discrete values which are bits of a watermark and a second data pattern of discrete values which are bits of a covert message;

impose a discrete value of the second data pattern over one or more discrete values of the first data pattern to generate a third data pattern, wherein the imposition is carried out by performing a Boolean operation with a discrete value of the second data pattern and multiple discrete values of the first data pattern;

process the digital signal into a series of bitframes, wherein each bitframe includes a set of frames, and wherein each frame includes a set of blocks; and

encode the third data pattern into the digital signal, wherein a different bit of the watermark is encoded in each frame of at least one subject bitframe, and wherein a same bit of the covert message is encoded in each frame of the subject bitframe.

21.   (Previously presented)   An apparatus comprising:

a processor;

a covert-channel-decoder executable on the processor to:

receive a digital signal, the signal having an a watermark encoded therein, the watermark being an encoded data pattern of discrete values is encoded into the signal in one of multiple discrete states, the encoded data pattern representing multiple data patterns comprising an original watermark data pattern and a covert data pattern;

extract a discrete value of the covert data pattern from a plurality of values of the encoded data pattern, wherein the extraction is carried out decoding a single discrete value of the covert data pattern from the digital signal based upon a state of a multiple discrete values of the encoded data pattern.

22.   (Previously presented)   A data encoding system for concealing data within a digital signal, the system comprising:

a receiver for receiving a first data pattern of discrete values which are bits of a watermark and a second data pattern of discrete values which are bits of a covert message;

an imposer coupled to such receiver, the imposer for imposing a discrete value of the second data pattern over one or more discrete values of the first data pattern to generate a third data pattern, wherein the imposer carries out its imposing by performing a Boolean operation with a discrete value of the second data pattern and multiple discrete values of the first data pattern;

an encoder coupled to the receiver and the imposer, the encoder for inserting within the digital signal one or more values of the third data pattern which are results of the imposer's imposing a discrete value of the second data pattern over one or more values of the first data pattern, wherein a different bit of the watermark is encoded in each frame of at least one subject bitframe, and wherein a same bit of the covert message is encoded in each frame of the subject bitframe.

23.   (Canceled)

24.   (Currently Amended)   A marked signal embodied on a computer-readable <u>storage</u> medium, the marked signal having an encoded data channel therein, wherein such encoded data channel has a covert data channel imposed therein, the marked signal generated in accordance with the following acts <u>comprising</u>:

receiving an original watermark data pattern of discrete values which are bits of a watermark and a covert data pattern of discrete values which are bits of a covert message;

imposing a discrete value of the covert data pattern over one or more discrete values of the original watermark data pattern to generate a third data pattern, wherein the imposing carries out its imposing by performing a Boolean operation with a discrete value of the covert data pattern and multiple discrete values of the watermark data pattern;

processing a digital signal into a series of bitframes, wherein each bitframe includes a set of frames, and wherein each frame includes a set of blocks; and

encoding the third data pattern into the digital signal to generate the marked signal, wherein a different bit of the watermark is encoded in each frame of at least one subject bitframe, and wherein a same bit of the covert message is encoded in each frame of the subject bitframe.

25.   (Canceled)

26.   (Previously presented)   A marked signal as recited in claim 24, wherein the Boolean operation is XOR.

27.   (Previously presented)   A marked signal as recited in claim 24, wherein

a pattern of discrete values may be encoded into the signal in one of multiple discrete states;

the imposing comprises encoding one or more multiple values of the first watermark data pattern into the digital signal into a state that indicates a single discrete value of the second covert data pattern.

28.   (Previously presented)   A marked signal as recited in claim 24, wherein the marked signal is selected from a group consisting of a digital audio signal, a digital video signal, a digital image signal, and a digital multimedia signal.

29-34.   (Canceled)

35. (Currently Amended): A method for concealing data within a digital audio signal, the method comprising:

receiving a first data pattern of discrete values which are bits of a watermark and a second data pattern of discrete values which are bits of a covert message;

imposing a single discrete value of the second data pattern on a plurality of values of the first data pattern, wherein the imposing encodes a third data pattern into the digital audio signal, wherein a different bit of the watermark is encoded in each frame of at least one subject a plurality of bitframes of the digital audio signal, wherein a same bit of the covert message is encoded in each frame of the subject a respective bitframe of the digital audio signal and the plurality of bitframes are arranged in a particular order; and

permuting a respective set of values encoded in each of the plurality of bitframes such that the respective sets of values associated with the plurality of bitframes are arranged in a different order than the particular order of the plurality of bitframes.

36. (Previously presented) A method as recited in claim 35, wherein the imposing comprises performing a Boolean operation with a discrete value of the second data pattern and a plurality of values of the first data pattern.

37. (Previously presented) A method as recited in claim 35, wherein the imposing comprises XORing a discrete value of the second data pattern with a plurality of values of the first data pattern.

38.   (Currently Amended)   A method as recited in claim 35, wherein

a pattern of discrete values may be encoded into the digital <u>audio</u> signal in one of multiple discrete states;

the imposing comprises encoding a plurality of values of the first data pattern into the digital <u>audio</u> signal into a state that indicates a single discrete value of the second data pattern.

39.   (Currently Amended)   A method as recited in claim 35, wherein ~~the digital signal is selected from a group consisting of a digital audio signal, a digital video signal, a digital image signal, and a digital multimedia signal~~ <u>permuting the respective sets of values of the plurality of bitframes comprises permuting values of the respective sets of values that are included in one or more particular sub-bands of frequencies within an audible spectrum</u>.

40.   (Previously presented)   A method as recited in claim 35, wherein the first data pattern is a watermark.

41.   (Currently Amended)   A computer-readable <u>storage</u> medium having computer-executable instructions that, when executed by a computer, performs the method as recited in claim 35.

42. (Currently Amended) A method for concealing data within a digital signal, the method comprising:

receiving (1) a first data pattern of discrete values which are bits of a watermark that cannot be identified and manipulated, and repeated throughout the digital signal; and (2) a second data pattern of discrete values which are bits of a covert message conveying a message that is not repeated throughout the digital signal;

imposing a discrete value of the second data pattern over one or more discrete values of the first data pattern to generate a third data pattern, wherein the imposing is carried out by performing a Boolean operation with a discrete value of the second data pattern and multiple discrete values of the first data pattern;

processing the digital data signal into a series of bitframes, wherein each bitframe includes a set of frames, and wherein each frame includes a set of blocks; and

encoding the third data pattern into the digital signal <u>without increasing bandwidth necessary to carry the digital signal</u>, wherein a different bit of the watermark is encoded in each frame of at least one subject bitframe, and wherein a same bit of the covert message is encoded in each frame of the subject bitframe.